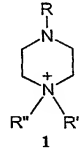
CLAIMS

1. Compounds able to modify silica surfaces and/or to inhibit or inverting the EEO flow in capillary electrophoretic separations, characterized by the following functional groups: a) one or more *quaternary* nitrogens; b) one or more basic atoms; c) one or more C_2-C_5 alkyl chains containing at the end a carbon atom substituted with one ore more electronegative atoms,

said compounds optionally containing asymmetry centers.

2. Compounds as claimed in claim 1, wherein the basic atoms according to b) are selected from the group consisting of *tertiary* nitrogen or oxygen, either ethereal or carbonyl, and the alkyl chains according to c) are C_4-alkyl chains.

3. Compounds as claimed in claims 1 and 2, of formula **1** and **2**,



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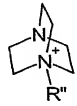
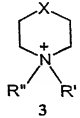


2

wherein R is a C_1-C_4 alkyl group, and R' and R'' are independently a (C_1-C_4) alkyl group or a group of formula $[(CH_2)_n]Z$, where n = 3-6 and Z is halogen, hydroxy, (C_1-C_4) alkoxy, p-toluenesulphonyloxy or N_3.

4. A compound of formula **1** as claimed in claim 3, wherein R and R' are CH_3 and R'' is $-(CH_2)_4$-I.

5. Compounds of formula **3**



3

wherein X is O, CO, CH_2, or CH-(C_1-C_{10}) alkyl; R is (C_1-C_4) alkyl and R' and R''

are independently (C_1-C_4) alkyl or a group of formula [$(CH_2)_n$]-Z, wherein n is 3-6 and Z is halogen, hydroxy, (C_1-C_4) alkoxy, p-toluenesulphonyloxy or N_3.

6. Compounds as claimed in claim 5, wherein R and R' are CH_3 and n is 4.

7. The use of the compounds as claimed in claims 1 to 6 for chromatographic separations utilizing silica-based material.

8. The use of spheres and of silica material in general, treated with the compounds as claimed in claims 1 to 6, for chiral chromatographic separations.

9. The use of the compounds as claimed in claims 1 to 6 for coating glass and borosilicate surfaces as used in nanotechnologies for electrophoretic separations of any class of molecules.

10. The use as claimed in claim 9, for coating chips as used in hyphenated techniques, chips interfaced with chromatographic columns, with mass detectors and other separation / detection devices, including two-dimensional separation methods.

11. The use of capillaries treated with the compounds as claimed in claims 1 to 6 for separations of proteins and peptides, at any value of the pH scale necessary for optimizing such separations, including capillary electrophoresis using hyphenated techniques.

12. The use of capillaries treated with the compounds as claimed in claims 1 to 6 for separations of proteins and peptides in both conventional buffers and amphoteric, isoelectric buffers, either acidic or neutral or alkaline.

13. The use of capillaries treated with the compounds as claimed in claims 3 to 6 for separations of oligonucleotides and DNA fragments, in both conventional buffers and amphoteric, isoelectric buffers, either acidic or neutral or alkaline.

14. The use of capillaries treated with the compounds as claimed in claim 3 to 6 for separations of small molecules able to interact with the capillary wall or whose separations might be hampered by the EEO flow of non-conditioned capillaries.

15. The use of capillaries treated with the compounds as claimed in claims 3 and 5 for chiral separations.